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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/628,470	07/31/2000	Peter G. Webb	10004003-1	5545

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EXAMINER

QUAN, ELIZABETH S

ART UNIT	PAPER NUMBER
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1743

DATE MAILED: 09/27/2002

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/628,470

Applicant(s)

WEBB, PETER G.

Examiner

Elizabeth Quan

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-29 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 1-29 is/are rejected.
- 7) ☐ Claim(s) ____ is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 31 July 2000 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on ____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☒ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. ____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 2.
- 4) ☐ Interview Summary (PTO-413) Paper No(s). ____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other:

DETAILED ACTION

Oath/Declaration

1. It does not identify the citizenship of each inventor. It is unclear what AU is meant for citizenship.

Drawings

2. The drawings are objected to as failing to comply with 37 CFR 1.84(p)(5) because they include the following reference sign(s) not mentioned in the description: (16a), (16b), and (16c) in FIGS. 2 and 3; (18) and (120) in FIG. 6. A proposed drawing correction, corrected drawings, or amendment to the specification to add the reference sign(s) in the description, are required in reply to the Office action to avoid abandonment of the application. The objection to the drawings will not be held in abeyance.

3. The drawings are objected to as failing to comply with 37 CFR 1.84(p)(5) because they do not include the following reference sign(s) mentioned in the description: (63) first mentioned on page 12, line 27 and (20) first mentioned on page 12, line 16. A proposed drawing correction or corrected drawings are required in reply to the Office action to avoid abandonment of the application. The objection to the drawings will not be held in abeyance.

Specification

4. The lengthy specification has not been checked to the extent necessary to determine the presence of all possible minor errors. Applicant's cooperation is requested in correcting any errors of which applicant may become aware in the specification.

Claim Rejections - 35 USC § 112

5. The following is a quotation of the second paragraph of 35 U.S.C. 112:

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The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter, which the applicant regards as his invention.

6. Claims 1-29 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

7. Referring to claims 1, 9, 14, 16-21, 26, and 27 it is unclear what types of “error” occur in the dispensers.

8. Referring to claims 1, 2, 6-9, 11, 13, 14, 16, 18-21, 23, 27-29, the term “second” is rendered indefinite, as it is unclear whether “second” refers to the next adjacent dispenser in the first group and the corresponding position of the next adjacent dispenser in the second group or the next adjacent row in the first group and the corresponding position of the next adjacent row in the second group.

9. Referring to claims 1, 14, and 27, “a second dispenser of each group while dispensing droplets from at least the second dispenser of the first group in at least part of the pattern for the selected path of the first group” is rendered indefinite as it is unclear whether the second dispenser of each and every group dispenses.

10. Referring to claims 1, 2, 8, 14, 16, and 27, it is unclear what “selected path” refers to. Is the path different from the path of the first group? Are the respective paths the same as the selected paths? When droplets are dispensed from at least the second dispenser of the first group in at least part of the pattern for the selected path of the first group, does this second dispenser always follow the path of the defective dispenser? What constitutes “pattern”? Or is the path of the defective dispenser the “pattern”?

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11. Referring to claims 2, 6, 13, 16, and 28, it is unclear what “same group” refers to. Is it the first group? Does the “same group” refer to the “multiple groups” or part of the “multiple groups”?

12. Claims 2, 6, 13, 16, and 28 recite the limitation "same group" in the last line. There is insufficient antecedent basis for this limitation in the claims.

13. Referring to claims 3 and 4, it is unclear what the “same series” refers to. Are the series the same as group? Is the series of dispensers within each group loaded with a same fluid the same as the series of the non-error dispenser and error dispenser? Is “series” used to compare certain dispensers within a group or certain dispensers of a group to corresponding dispensers of another group? Do the corresponding “series” in each of the group communicate with a common reservoir? Or does the dispensers in the “series” of each of the multiple groups communicate with a common reservoir? There is confusion with the term “that series.”

14. Claims 3, 4, 12, 17, and 24 recite the limitation "same series" in the second to the last line of the claims. There is insufficient antecedent basis for this limitation in the claims.

15. Referring to claims 12, 17, and 24, it is unclear what the “same series” and “that series” refer to. Are the series the same as group? Is the series of dispensers within each group the same as the series of the non-error dispenser and error dispenser? Is “series” used to compare certain dispensers within a group or certain dispensers of a group to corresponding dispensers of another group? Do the corresponding “series” in each of the group communicate with a common reservoir? Or does the dispensers in the “series” of each of the multiple groups communicate with a common reservoir?

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16. Claims 12, 17, and 24 recite the limitation "that series" in the third line. There is insufficient antecedent basis for this limitation in the claim.

17. Referring to claims 8, 20, and 29, the claim is rendered indefinite with "first and second dispensers of each group *alternately* moved along the selected path for that group while droplets are dispensed from non-error dispensers of the first and second groups..." It is difficult to understand. The first and second groups are moved alternately with respect to what?

18. Referring to claim 9, 11-13, 21, and 23-25, columns and rows are relative.

19. Referring to claims 11 and 23, it is unclear what "that group" refers to as the preceding statement recites "each of multiple groups."

Claim Rejections - 35 USC § 103

20. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

21. The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

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22. Claims 1-4, 6-9, 11-14, 16-21, and 23-29 are rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent No. 5,581,284 to Hermanson in view of U.S. Patent No. 4,963,882 to Hickman.

Referring to claims 1-4, 6-9, 11-14, 16-21, and 23-29, Hermanson discloses a method, apparatus, and computer program for fabricating a chemical array (see ABSTRACT). A head system (14,15,16,17) has multiple groups of drop dispensers (23) with each group having multiple dispensers (see ABSTRACT; FIGS. 1-7; COL. 2, lines 52-55). The series of dispensers in each printbar is loaded with the same fluid (see COL. 4, lines 9-16). The series of dispensers within a group of multiple columns communicates with a corresponding common reservoir (29) for that series (see FIG. 2; COL. 3, lines 22-27). A processor drives the dispensers (23) to eject droplets (see COL. 3, lines 9-21). In order to extend the useful life of the head system (14,15,16,17), each dispenser is checked for droplet ejection to identify any dispenser that fails to eject a droplet as a problem dispenser (see COL. 2, lines 15-20; COL. 5, lines 7-17). A sensor may be used to monitor dispensers for an error and provide corresponding data to the processor (see COL. 5, lines 34-67; COL. 6, lines 1-43). When a dispenser of a first group is in error, a second dispenser of each of the other groups is aligned with the completed pattern of the selected path for its group (see COL. 2, lines 20-28; COL. 4, lines 50-67; COL. 5, lines 1-6). The recording medium is positioned with a first row of each of the other groups of the head system such that it is aligned with the selected path for that group (see COL. 4, lines 44-67; COL. 5, lines 1-16). The substrate is moved while dispensing droplets from non-error dispensers in the first row of the first group in

accordance with a part of the pattern for the selected path for that group (see COL. 4, lines 44-67; COL. 5, lines 1-16). The substrate is re-positioned such that a second row of each group of the head system is aligned with the selected paths (see COL. 4, lines 44-67; COL. 5, lines 1-16). The substrate is moved while dispensing droplets from non-error dispensers in the second row of the first group in accordance with a part of the pattern for that group (see COL. 4, lines 44-67; COL. 5, lines 1-16).

Hermanson does not disclose a transport system to move the head system and dispensing droplets from at least the second dispenser of the first group. However, it is well known in the art as Hickman discloses a transport system to move the head system (see COL. 3, lines 13-25; COL. 7, lines 18-21 and 37-47; COL. 9, lines 25-51). It appears there is more control to dispense in a certain location with a moving head system rather than a moving recording medium. Hickman discloses the print head with two groups of nozzles (54,56) with multiple rows and columns of dispensers (see FIG. 2). While dispensers of different column within first and second rows of a first group may be in error, the head is positioned with a first row of each group aligned with the selected path for that group (see COL. 9, lines 25-68; COL. 10, lines 1-10). The head is moved with respect to the substrate while dispensing droplets from non-error dispensers in the first row of the first group in accordance with a part of the pattern from the selected path for that group (see COL. 9, lines 25-68; COL. 10, lines 1-10). The head is re-positioned such that a second row of each group is aligned with the selected paths (see COL. 9, lines 25-68; COL. 10, lines 1-10). The head is moved with respect to the substrate while dispensing droplets from non-error dispensers in the second row of the each group in

accordance with a part of the pattern for that group (see COL. 9, lines 25-68; COL. 10, lines 1-10). In another perspective, Hickman further discloses at least the second dispenser of the print head as a single group of nozzles dispenses droplets in the partial or complete pattern for the selected path of the first group to ensure all desired locations of an array are filled even if a dispenser has malfunctioned (see COL. 3, lines 36-39, 45-48, 54-59, and 63-68; COL. 4, lines 1-8, 20-23, 50-54, and 64-67). Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the method, apparatus, and computer program of Hermanson to include the transport system to move the head system as in Hickman for more control over dispensing into a certain location and dispensing droplets from at least the second dispenser of the first group or print head in the partial or complete pattern for the selected path of the first group as in Hickman to ensure all desired locations of an array are filled in the case of a malfunctioned dispenser.

23. Alternatively, claims 1-4, 6-9, 11-14, 16-21, and 23-29 are rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent No. 5,581,284 to Hermanson in view of U.S. Patent No. 4,963,882 to Hickman and U.S. Patent No. 4,907,013 to Hubbard et al.

Referring to claims 1-4, 6-9, 11-14, 16-21, and 23-29, Hermanson discloses a method, apparatus, and computer program for fabricating a chemical array (see ABSTRACT). A head system (14,15,16,17) has multiple groups of drop dispensers (23) with each group having multiple dispensers (see ABSTRACT; FIGS. 1-7; COL. 2, lines 52-55). The series of dispensers in each printbar is loaded with the same fluid (see COL. 4, lines 9-16). The series of dispensers within a group of multiple columns

communicates with a corresponding common reservoir (29) for that series (see FIG. 2; COL. 3, lines 22-27). A processor drives the dispensers (23) to eject droplets (see COL. 3, lines 9-21). In order to extend the useful life of the head system (14,15,16,17), each dispenser is checked for droplet ejection to identify any dispenser that fails to eject a droplet as a problem dispenser (see COL. 2, lines 15-20; COL. 5, lines 7-17). A sensor may be used to monitor dispensers for an error and provide corresponding data to the processor (see COL. 5, lines 34-67; COL. 6, lines 1-43). When a dispenser of a first group is in error, a second dispenser of each of the other groups is aligned with the completed pattern of the selected path for its group (see COL. 2, lines 20-28; COL. 4, lines 50-67; COL. 5, lines 1-6). The recording medium is positioned with a first row of each of the other groups of the head system such that it is aligned with the selected path for that group (see COL. 4, lines 44-67; COL. 5, lines 1-16). The substrate is moved while dispensing droplets from non-error dispensers in the first row of the first group in accordance with a part of the pattern for the selected path for that group (see COL. 4, lines 44-67; COL. 5, lines 1-16). The substrate is re-positioned such that a second row of each group of the head system is aligned with the selected paths (see COL. 4, lines 44-67; COL. 5, lines 1-16). The substrate is moved while dispensing droplets from non-error dispensers in the second row of the first group in accordance with a part of the pattern for that group (see COL. 4, lines 44-67; COL. 5, lines 1-16).

Hermanson does not disclose a transport system to move the head system and dispensing droplets from at least the second dispenser of the first group. However, it is well known in the art as Hickman discloses a transport system to move the head system

(see COL. 3, lines 13-25; COL. 7, lines 18-21 and 37-47; COL. 9, lines 25-51). It appears there is more control to dispense in a certain location with a moving head system rather than a moving recording medium. Hickman discloses the print head with two groups of nozzles (54,56) with multiple rows and columns of dispensers (see FIG. 2). While dispensers of different column within first and second rows of a first group may be in error, the head is positioned with a first row of each group aligned with the selected path for that group (see COL. 9, lines 25-68; COL. 10, lines 1-10). The head is moved with respect to the substrate while dispensing droplets from non-error dispensers in the first row of the first group in accordance with a part of the pattern from the selected path for that group (see COL. 9, lines 25-68; COL. 10, lines 1-10). The head is re-positioned such that a second row of each group is aligned with the selected paths (see COL. 9, lines 25-68; COL. 10, lines 1-10). The head is moved with respect to the substrate while dispensing droplets from non-error dispensers in the second row of the each group in accordance with a part of the pattern for that group (see COL. 9, lines 25-68; COL. 10, lines 1-10). In another perspective, Hickman further discloses at least the second dispenser of the print head as a single group of nozzles dispenses droplets in the partial or complete pattern for the selected path of the first group to ensure all desired locations of an array are filled even if a dispenser has malfunctioned (see COL. 3, lines 36-39, 45-48, 54-59, and 63-68; COL. 4, lines 1-8, 20-23, 50-54, and 64-67). Alternatively, Hubbard discloses dispensing droplets from at least the second dispenser of the first group in at least part of the pattern for the selected path of the first group to compensate for malfunctioned dispensers (see COL. 9, lines 3-9). Therefore, it would have been obvious

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to one having ordinary skill in the art at the time the invention was made to modify the method, apparatus, and computer program of Hermanson to include the transport system to move the head system as in Hickman for more control over dispensing into a certain location and dispensing droplets from at least the second dispenser of the first group or print head in the partial or complete pattern for the selected path of the first group as in Hickman or Hubbard to ensure all desired locations of an array are filled in the case of a malfunctioned dispenser.

24. Claims 5, 10, 15, and 22 are rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent No. 5,581,284 to Hermanson in view of U.S. Patent No. 4,963,882 to Hickman and U.S. Patent No. 6,001,309 to Gamble et al.

Referring to claims 5, 10, 15, and 22, Hermanson in view of Hickman do not disclose dispensers as pulse jets. However, Gamble et al. disclose pulse jet dispensers to deliver small volumes of solutions in a precise manner to provide a micro-sized spot (see COL. 1, lines 52-67; COL. 2, lines 1-17 and 44-67). Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the apparatus of Hermanson in view of Hickman to include a pulse jet dispenser to deliver small volumes of solutions in a precise manner to provide micro-sized droplets.

25. Claims 5, 10, 15, and 22 are rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent No. 5,581,284 to Hermanson in view of U.S. Patent No. 4,963,882 to Hickman, U.S. Patent No. 4,907,013 to Hubbard et al., and U.S. Patent No. 6,001,309 to Gamble et al.

Referring to claims 5, 10, 15, and 22, Hermanson in view of Hickman and Hubbard et al. do not disclose dispensers as pulse jets. However, Gamble et al. disclose

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pulse jet dispensers to deliver small volumes of solutions in a precise manner to provide a micro-sized spot (see COL. 1, lines 52-67; COL. 2, lines 1-17 and 44-67). Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the apparatus of Hermanson in view of Hickman and Hubbard et al. to include a pulse jet dispenser to deliver small volumes of solutions in a precise manner to provide micro-sized droplets.

Conclusion


26. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. The prior art includes one or more limitations in the claims.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Elizabeth Quan whose telephone number is (703) 305-1947. The examiner can normally be reached on M-F (8:00-4:30).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jill Warden can be reached on (703) 308-4037. The fax phone numbers for the organization where this application or proceeding is assigned are (703) 879-9310 for regular communications and (703) 872-9311 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0661.

Elizabeth Quan
Examiner
Art Unit 1743


Jill Warden
Supervisory Patent Examiner
Technology Center 1700